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Polyspondylogobius sinensis, A New Genus and Species of Gobiid Fish from Southern China

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Abstract A new genus and species of goby, *Polyspondylogobius sinensis*, is described from the estuaries of southern China. It is closest in appearance to *Eutaeniichthys* Jordan and Snyder, having a long body, a rostral fold in adults, and tube-like anterior nostrils. However, *Polyspondylogobius* differs from all other gobiid genera by the combination of a long, scaleless body, two closely-positioned dorsal fins, spinous dorsal-fin pterygiophore formula 14–21 or 15–21, 31–34 second dorsal-fin soft rays, 18–20 anal-fin soft rays and 52–55 vertebrae.

During investigations on the gobioid fish fauna of China, specimens of a unique goby were collected from estuaries of the Beijin and Pearl rivers (Guangdong), Nanlang (Guangdong), Xinhui (Guangdong), Taiping (Guangdong), and Hepu (Guangxi). Although resembling *Eutaeniichthys gilli*, they had numerous vertebrae and an unusual spinous dorsal-fin pterygiophore formula compared with all other gobiid genera. Accordingly, they are described below as a new genus and species.

Methods for counts and measurements followed Akihito et al. (1988) and Hubbs and Lagler (1958), except as follows. Body depth was measured vertically from the origin of the first dorsal fin to the ventral margin of the abdomen. Eye diameter is the greatest fleshy diameter. Interorbital width is the least bony width. The spinous dorsal-fin pterygiophore formula follows Birdsong et al. (1988). Skeletal observations and vertebral counts (including urostyle) were made on cleared and stained specimens (SFC-928, FRLM 12223, 12225 and 12227, and NSMT-P 45181) and from radiographs (FRLM 12224 and NSMT-P 45182 and 45183). Observations on sensory papillae arrangement were made on specimens stained with cyanine.

Specimens examined during the study are deposited as follows: Laboratory of Fishes, Shanghai Fisheries University (SFC); Fisheries Research Laboratory, Mie University (FRLM); National Science Museum, Tokyo (NSMT); and Laboratory of Ichthyology, Akasaka Imperial Palace (LIAIP).

Polyspondylogobius gen. nov.
(New Chinese name: Duozhui xiahuyu shu)

Type species: *Polyspondylogobius sinensis* sp. nov.

Diagnosis. An elongate gobiid with compressed body and small, slightly depressed head; dorsal-fin rays III–I, 31–34, two dorsal fins closely positioned; spinous dorsal-fin pterygiophore formula 14–21 or 15–21; anal-fin rays I, 18–20; vertebrae 52–55; snout enlarged anteriorly, rostral fold present; anterior nostril with a well-developed tube; posterior nostril pore-like; mouth large, subterminal and slightly oblique; teeth simple, minute, in narrow bands on both jaws, no canine teeth; gill openings wide, ventral portion slightly extended anteriorly; no barbels; gill membranes united to isthmus; isthmus narrow; pseudobranchiae present; branchiostegals 5; edge of opercle unarmed; head and body scaleless; no sensory pores on head; no lateral line.

Comparison. *Polyspondylogobius* is similar to *Eutaeniichthys* Jordan and Snyder, 1901, in having a long body, 3 first dorsal-fin spines, a rostral fold and tube-like anterior nostrils, but differs from the latter in having the dorsal fins close together (widely separated in the latter), spinous dorsal-fin pterygiophore formula 14–21 or 15–21 (10–21000), 31–34 second dorsal-fin soft rays (17–18), 18–20 anal-fin soft rays (11), 52–54 vertebrae (38–39) and a scaleless body (scaled).

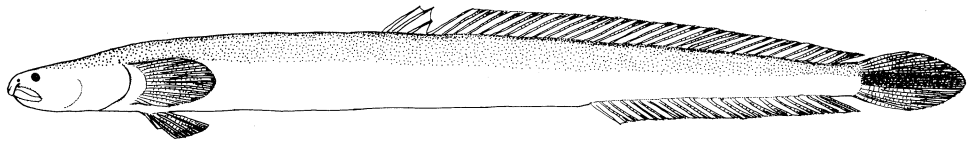

Fig. 1. *Polyspondylogobius sinensis* gen. et sp. nov., holotype, SFC-926, male, 45.5 mm SL.

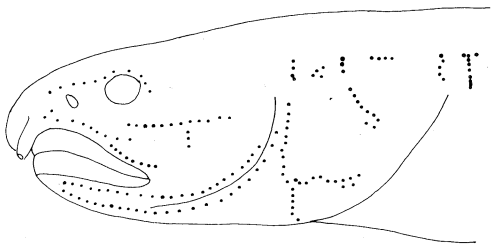

Fig. 2. Arrangements of sensory papillae of *Polyspondylogobius sinensis* gen. et sp. nov., holotype, SFC-926.

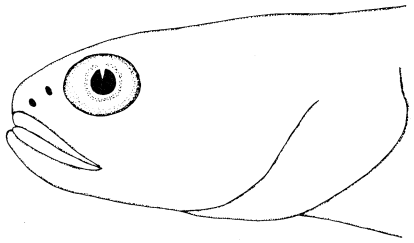

Fig. 3. Head of juvenile *Polyspondylogobius sinensis* gen. et sp. nov., paratype, FRLM 12226, 22.3 mm SL.

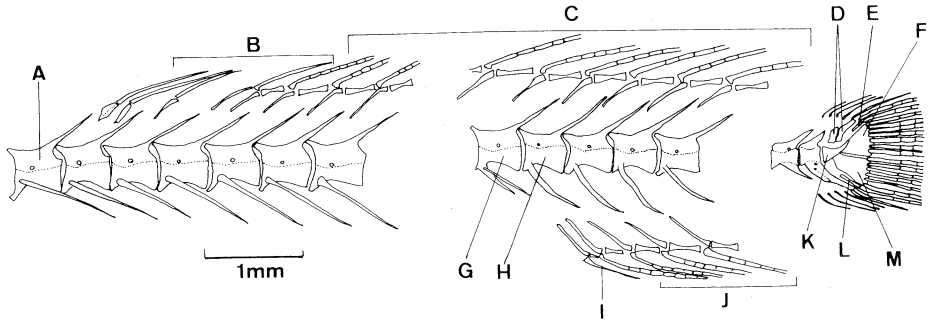

Fig. 4. Vertebrae and associated dorsal- and anal-fin pterygiophores, and caudal bones of *Polyspondylogobius sinensis* gen. et sp. nov., paratype, FRLM 12225, 28.0 mm SL. *A*—15th precaudal vertebra; *B*—dorsal-fin spines; *C*—dorsal-fin soft rays; *D*—epurals; *E*—hypural 5; *F*—hypurals 3+4; *G*—31st precaudal vertebra; *H*—first caudal vertebra; *I*—anal-fin spine; *J*—anal-fin soft rays; *K*—urostyle; *L*—parhypural; *M*—hypurals 1+2.

Etymology. From the Greek "poly" and "spondylos," meaning "many" and "vertebra," respectively, in reference to the uniquely numerous vertebrae.

Polyspondylogobius sinensis sp. nov.
(New Chinese name: Zhonghua duozhui xiahuyu)
(Figs. 1–5)

Holotype. SFC-926, 45.5 mm in standard length (SL), male, estuary of Beijin River, Yangjiang, Guangdong (21°50′N, 112°00′E), 3 January 1985, collected by light-fishing.

Paratypes. FRLM 12223, 49.0 mm SL, male, same locality as holotype, 5 April 1985; FRLM 12224, 38.0 mm SL, female, Nanlang, Zhongshan, Guangdong (22°30′N, 113°30′E), 15 April 1985; FRLM 12225, 28.0 mm SL,

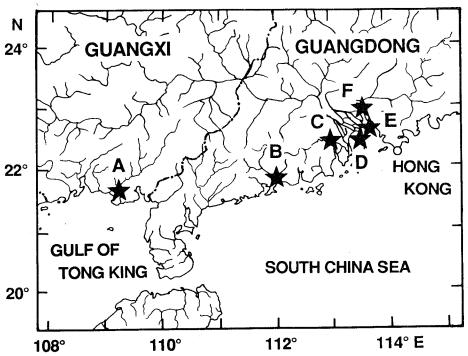

Fig. 5. Distribution of *Polyspondylogobius sinensis* gen. et sp. nov. *A*—Hepu, Guangxi; *B*—Beijin River, Yangjiang, Guangdong; *C*—Xinhui, Guangdong; *D*—Nanlang, Zhongshan, Guangdong; *E*—Pearl River mouth; *F*—Taiping, Dongguan, Guangdong.

Table 1. Counts and measurements of *Polyspondylogobius sinensis* gen. et sp. nov.

Catalogue number	Holotype	Paratypes								
	SFC-926	SFC-928	SFC-2016	SFC-2056	FRLM 12223	FRLM 12224	FRLM 12225	NSMT-P 45181	NSMT-P 45182	NSMT-P 45183
Sex	Male	Male	Male	Female	Male	Female	Male			
Standard lengh (mm)	45.5	42.0	31.0	37.5	49.0	38.0	28.0	36.0	45.0	36.0
Counts										
Dorsal fin rays	III–I, 34	III–I, 32	III–I, 33	III–I, 33	III–I, 31	III–I, 33	III–I, 31	III–I, 33	III–I, 31	III–I, 32
Anal fin rays	I, 20	I, 19	I, 19	I, 19	I, 18	I, 20	I, 20	I, 19	I, 19	I, 19
Caudal fin rays	14	14	14	14	14	14	14	14	14	14
Pectoral fin rays	20	19	19	19	19	19	19	20	19	19
Pelvic fin rays	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5
Vertebrae		31+23			31+21	31+24	31+22	31+23	32+23	32+20
Measurements										
As % of standard length										
Body depth	11.0	9.5	9.7	8.5	8.6	8.2	10.7	8.3	11.1	9.7
Head length	14.9	15.5	13.2	14.7	14.3	14.5	14.6	15.3	15.3	15.3
As % of head length										
Head depth	44.1	43.1	56.1	45.5	44.3	45.5	53.7	45.5	50.7	45.5
Snout length	29.4	29.2	19.5	20.0	25.7	27.3	19.5	25.5	27.5	23.6
Eye diameter	11.8	12.3	9.8	9.1	5.7	9.1	9.8	9.1	10.1	9.1
Interorbital width	11.8	12.3	17.1	10.9	11.4	12.7	14.6	10.9	11.6	10.9
Upper jaw length	26.5	27.7	24.4	23.6	28.6	23.6	24.4	32.7	24.6	32.7

male, Hepu, Guangxi (21°40′N, 109°10′E), 10 April 1983; FRLM 12226, juvenile, 22.3 mm SL, collected with holotype; FRLM 12227, juvenile, 22.8 mm SL, Taiping, Dongguan, Guangdong (23°00′N, 113°30′E), 5 March 1985; FRLM 12419–12422, 4 specimens, juveniles, 22.0–23.0 mm SL, collected with FRLM 12227; NSMT-P 45181, 36.0 mm SL, collected with FRLM 12225; NSMT-P 45182, 45.0 mm SL, collected with holotype; NSMT-P 45183, 36.0 mm SL, Pearl River mouth, Guangdong (22°40′N, 113°40′E), 5 April 1985; SFC-928, 42.0 mm SL, male, collected with NSMT-P 45183; SFC-2016, 31.0 mm SL, male, collected with FRLM 12224; SFC-2056, 37.5 mm SL, female, Xinhui, Guangdong (22°30′N, 113°00′E), 18 April 1985. All the adult paratypes were caught by light-fishing. Juveniles were collected by plankton nets.

Comparative materials. *Eutaeniichthys gilli*: LIAIP 1987261, 14 specimens (28.0–37.0 mm SL), Kisarazu, Chiba (35°25′N, 139°55′E), 5 May 1987; LIAIP 199139, (9 specimens [21.5–31.5 mm SL] examined out of 66), Nichinan, Miyazaki (31°30′N, 131°20′E), February 1991.

Description (most characters given in the generic diagnosis are not repeated). Counts and measurements of the types are shown in Tables 1 and 2.

Body very long, slender, tapering posteriorly; snout moderately rounded, enlarged anteriorly; rostral fold present in adults, overhanging upper jaw; eyes small, directed obliquely upward, diameter less than snout length in adults, but nearly equal in juveniles; interorbital space narrow, convex, width greater than or nearly equal to eye diameter in adults, but less than eye diameter in juveniles; anterior nostril with a well-developed tube in adults, extending beyond base of upper lip (Fig. 2), tube not developed in juveniles (Fig. 3); posterior nostril pore-like, slightly raised in anterior margin of eye; jaws equal; posterior end of upper jaw extending beyond posterior margin of eye in large specimens; tongue truncate, anterior edge free; sensory papillae on head as shown in Figure 2; gill rakers on first arch 2+8, short and granular.

Two dorsal fins closely positioned and membrane behind third spine of first dorsal fin almost meeting first spine of second dorsal fin in males; dorsal fins slightly more separated and depressed first dorsal fin not reaching second dorsal-fin origin in females; spines of first dorsal fin slender, second spine longest; anal fin inserted below base of 13th or 14th dorsal-fin soft ray; pectoral fin obtusely rounded, shorter than head; pelvic fin a little shorter than pectoral fin, united anteriorly with mate to form a sucking disk, free posteriorly; caudal fin acutely rounded, shorter than head. Vertebrae, associated pterygiophores, and caudal bones are shown in Figure 4. Spinous dorsal-fin pterygiophore formula 14–21 or 15–21; 2 anal-fin pterygiophores anterior to first haemal spine; epurals 2 (Fig. 4).

Color in life semi-transparent. In formalin brownish or yellowish, pale ventrally; middle of caudal fin with a short grey band; fin membranes translucent.

Distribution and habitat. *Polyspondylogobius sinensis* is known only from the lower reaches and estuaries of rivers in Guangdong and Guangxi,

Table 2. Counts and measurements* of juvenile *Polyspondylogobius sinensis* gen. et sp. nov.

Catalogue number	Paratypes					
	FRLM 12226	FRLM 12227	FRLM 12419	FRLM 12420	FRLM 12421	FRLM 12422
Standard length (mm)	22.3	22.8	23.0	23.0	22.0	22.5
Counts						
Dorsal fin rays	III–I, 34	III–I, 34	III–I, 33	III–I, 33		
Anal fin rays	I, 19	I, 18	I, 20	I, 20		I, 20
Measurements						
As % of standard length						
Body depth	8.5	8.8	9.6	9.1	7.3	8.9
Head length	14.3	14.5	15.2	14.8	14.5	13.8
As % of head length						
Head depth	53.1	54.5	51.4	55.9		51.6
Snout length	18.8	18.2		14.7	18.8	19.4
Eye diameter	15.6	15.2		14.7	12.5	16.1
Interorbital width	7.8	7.0		8.8		8.1

* Specimen condition sometimes prevented accurate recording of counts and/or measurements.

southern China (Fig. 5). It inhabits mainly brackish water, river mouths and tidal pools, but may also be found near the bottom in shallow, sandy bays.

Etymology. The specific name "*sinensis*" is derived from the old name for China.

Remarks. Although most gobioids have both cephalic sensory canals and papillae (Takagi, 1988; Pezold, 1993), *Polyspondylogobius* has only papillae without canals. Members of the "*Astrabe* Group" of Birdsong et al. (1988), e.g., *Astrabe*, *Clariger*, *Eutaeniichthys*, *Leucopsarion* and *Luciogobius*, also have no canals (see Akihito et. al., 1988). Besides, *Polyspondylogobius* has numerous vertebrae, posteriorly displaced first dorsal fin containing 3 spines, and small eyes, like such members of "*Astrabe* Group." Thus, the genus possibly belongs the "*Astrabe* Group" of subfamily Gobionellinae proposed by Pezold (1993). However, the spinous dorsal-fin pterygiophore formula of the genus is unique. Moreover, the genus also has the greatest number of vertebrae recorded in the Gobiidae (see Birdsong et al., 1988).

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中国南部から採集された新属新種のハゼ科魚類 *Polyspondylogobius sinensis*

木村清志・伍　漢霖

中国南部広東省および広西壮族自治区の河川下流部や河口域で採集された16個体（体長22.0–49.0mm）に基づき，新属新種のハゼ科魚類 *Polyspondylogobius sinensis*（新中国名：多椎蝦虎魚属，中華多椎蝦虎魚）を記載した．本属は細長い体をもつこと，円く突出した吻をもつこと，前鼻孔が管状に伸長することなど，ヒモハゼ属と類似しているが，第1背鰭と第2背鰭が隣接していること，第2背鰭軟条数が31–34本であること，背鰭担鰭骨式が14–21あるいは15–21であること，臀鰭軟条数が18–20本であること，脊椎骨数が52–55個であること，および体に鱗がないことなどによって他のハゼ科魚類と明瞭に区別できる．なお，本属の背鰭担鰭骨式は特異的であり，また脊椎骨数はハゼ科の中で最も多い．

（木村：〒517–07 三重県志摩郡志摩町和具志摩郵便局私書箱11号　三重大学生物資源学部附属水産実験所；伍：200090 中華人民共和国上海市軍工路334　上海水産大学魚類室）